



The Meadows School

Cognition and Learning: Science

Introduction

The Meadows School is deeply committed to achieving the best possible outcomes for all its students. We provide a broad and balanced curriculum designed to meet the unique needs of each learner. To ensure this, we implement a multi-tiered curriculum model, tailoring both content and teaching strategies to the specific needs of our pupils. This approach is structured around four key pedagogical pathways; these pathways include the Pre-formal Pathway (Engagement for Life), the Informal Pathway (Foundations for Life), the Semi-formal Pathway (Learning for Life), and the Formal Pathway (Options for Life).

Each curriculum pathway is carefully designed to align with the developmental needs of the learners, ensuring they build a strong foundation of knowledge and skills. This prepares them for progression into the next pathway or equips them for life beyond school, including successful transitions into adulthood.

Our **Science** curriculum is intentionally sequenced and planned to ensure that prior knowledge is built upon, and students are prepared for their next steps. **It is strongly connected to the Preparation for Adulthood (PfA) outcomes, supporting key areas such as Employment, Independent Living, Community Inclusion, and Health.**

Adopting a mastery approach to teaching Science, we believe that every pupil can learn and enjoy the subject. We focus on developing **scientific** learning behaviours that are responsive to each student's individual motivators and needs, allowing them to engage deeply with the content. By fostering a strong understanding of core concepts, we ensure that students are well-equipped for future learning and development.

[At the Meadows School we offer](#) a high-quality science curriculum providing the foundations for understanding the world around us. Students will participate in a fun and safe environment to help build up a body of key knowledge and concepts and are encouraged to see how this can be used to explain what they see and experience in everyday life.

Students will work on the working scientifically skills ladder and progress in five main skills:

1. Practical skills
2. Maths skills
3. Demonstrating Knowledge and understanding
4. Applying knowledge and understanding
5. Drawing conclusions

Pathway Model (Intent, Implementation, Impact)

Engagement for Life (Pre-Formal; PMLD)	Foundations for Life (Informal; Complex ASC)	Learning for Life (Semi-Formal; SLD)	Options for Life (Formal; MLD)
This pathway typically consists of PMLD learners who need and respond to a sensory based curriculum that supports their holistic care and physical wellbeing needs.	This pathway typically consists of our complex ASC/CLDD learners who may have complex needs alongside varying communication needs. These students often need support to manage their emotions and process information	This pathway typically consists of learners who have SLD who are learning to communicate through the most appropriate means to them, building independence and confidence to generalise skills in different social contexts.	This pathway typically consists of learners who have MLD who are learning to build on existing skills and develop greater independence and confidence within different social contexts and environmental settings.
Intent			
Cognition and Learning Intent	Early Science Skills Intent	Science Intent	Science Intent
❖ The Engagement for Life Pathway curriculum for Cognition and Learning recognizes that learners with Profound and Multiple Learning Difficulties (PMLD) have distinct ways of learning, and that their learning journey is unlikely to follow a linear path due to their individual needs and strengths. Learners following the Engagement for Life Pathway curriculum for Cognition and Learning:	❖ The intent of the early science skills curriculum for Complex ASC/CLDD learners is to provide a foundation for understanding the world around them, using structured, sensory-rich, and individualized approaches that cater to their specific needs and learning styles. This curriculum aims to engage students through exploration, sensory experiences, and practical activities that foster curiosity, independence, and	❖ The intent of the science curriculum for semi-formal learners is to provide a rich and engaging learning experience that fosters curiosity, exploration, and understanding of the world around them. It aims to develop foundational scientific concepts and skills through hands-on, sensory-rich activities that cater to their individual needs and learning styles. ❖ Students will participate in a fun and safe environment to help build up a body of key knowledge and concepts	❖ The intent of the science curriculum for Formal MLD (Moderate Learning Difficulties) learners is to provide a structured and accessible approach to developing scientific knowledge, skills, and understanding. This curriculum aims to build curiosity, encourage independent thinking, and foster practical problem-solving abilities while considering the individual needs and abilities of learners. ❖ Students will participate in a fun and safe

❖ Receive immediate and consistent feedback on their responses. ❖ Are provided with opportunities to interact and respond to the actions of others. ❖ Learn holistically through a curriculum that is interconnected. ❖ Engage in a responsive and immersive environment that fosters social, communicative, and cognitive skills. ❖ Access personalized learning through specialized teaching approaches. ❖ Experience a curriculum adapted to reflect their interests and motivations, ensuring engagement. ❖ Require varying levels of sensory stimulation.	basic scientific understanding in a supportive and predictable environment. ❖ To nurture a sense of curiosity and promote independent thinking through the exploration of early scientific ideas. ❖ to support the development of communication skills by using knowledge and understanding of the world as a platform for both verbal and non-verbal expression. ❖ To connect scientific learning with real-world situations, helping learners see the relevance of early science concepts in their daily lives and develop functional knowledge. ❖ Students will participate in a fun and safe environment to help build up a body of key knowledge and concepts and are encouraged to see how this can be used to explain what they see and experience in everyday life.	and are encouraged to see how this can be used to explain what they see and experience in everyday life. ❖ Students will work on the working scientifically skills ladder and progress in five main skills: 1. Practical skills 2. Maths skills 3. Demonstrating Knowledge and understanding 4. Applying knowledge and understanding 5. Drawing conclusions	environment to help build up a body of key knowledge and concepts and are encouraged to see how this can be used to explain what they see and experience in everyday life. ❖ Students will work on the working scientifically skills ladder and progress in five main skills: 1. Practical skills 2. Maths skills 3. Demonstrating Knowledge and understanding 4. Applying knowledge and understanding 5. Drawing conclusions
--	---	---	---

Implementation

Implementation	Implementation	Implementation	Implementation
Pupils are supported in engaging with activities and experiences by ❖ Providing sensory-rich experiences to stimulate sight, sound, touch, taste, and smell, allowing learners to connect with the environment through their senses. ❖ Using tactile materials, sounds, lights, and movement to encourage sensory engagement with natural and physical phenomena (e.g., water, textures, light, or temperature). ❖ Introducing basic science concepts such as hot/cold, light/dark, wet/dry, and fast/slow through sensory experiences and hands-on exploration. ❖ Providing multiple communication methods for learners to express their observations and responses (e.g., eye gaze, gestures, switches, or communication boards).	Pupils are supported in engaging with activities and experiences by ❖ Planning and delivering sensory-based science activities that appeal to a range of senses, including touch, sight, sound, and smell (e.g., exploring materials such as water, clay, or sand). ❖ Providing tactile, auditory, and visual stimuli to engage students and stimulate their curiosity (e.g., using brightly colored objects, textured materials, and sounds to introduce basic scientific concepts). ❖ Using sensory play (e.g., water play, nature walks, and light exploration) to help learners understand basic science concepts such as properties of materials (e.g., floating and sinking, hot/cold). ❖ Offering simple, hands-on science experiments that encourage exploration through trial and error,	<u>Key stage 3</u> Science is given timetable priority and delivered through 1 discrete lesson a week covering 3 core areas of science: - Materials and their properties - Physical Processes - Life Processes on a rolling 3-year program see here which builds sequentially by revisiting and building on prior knowledge across the above 3 areas. All teachers in these key stages plan and deliver stimulating, challenging, differentiated and personalised lessons to all pupils. The Meadows school assessment system ensures personalised learning outcomes are delivered in all science lessons <u>Key stage 4</u> Science is given timetable priority and delivered through 1 discrete lesson a week covering 3 core areas of science: - Materials and their properties - Physical Processes - Life Processes on a rolling 2-year program see here which builds sequentially by	<u>Key stage 3</u> Science is given timetable priority and delivered through 1 discrete lesson a week covering 3 core areas of science: - Materials and their properties - Physical Processes - Life Processes on a rolling 3-year program which builds sequentially by revisiting and building on prior knowledge across the above 3 areas. All teachers in these key stages plan and deliver stimulating, challenging, differentiated and personalised lessons to all pupils. The Meadows school assessment system ensures personalised learning outcomes are delivered in all science lessons <u>Key stage 4</u> Science is given timetable priority and delivered through 1 discrete lesson a week covering 3 core areas of science: - Materials and their properties - Physical Processes - Life Processes on a rolling 2-year program which builds sequentially by

❖ Introducing simple cause-and-effect activities, such as pressing a button to activate a sound or light, to help learners understand how actions can lead to changes in their environment. ❖ Encouraging learners to explore and understand the relationship between their actions and the outcomes. ❖ Using appropriate resources (e.g., visual aids, tactile objects, specialized equipment) to support participation and engagement in activities. ❖ Using calming, structured sensory experiences to support emotional regulation and create a predictable, safe learning environment.	such as observing changes in materials (e.g., melting ice, mixing colours, or watching plants grow). ❖ Providing opportunities for students to interact with real-life objects and phenomena (e.g., feeling different textures, observing the weather, or handling objects of different weights and sizes). ❖ Fostering joint attention by focusing on shared sensory experiences, prompting and supporting interaction during hands-on tasks. ❖ Creating opportunities for learners to experience cause-and-effect relationships through interactive experiments (e.g., pressing a button to create sound or light, adding heat to change a material). ❖ Reinforcing understanding of cause and effect by repeating actions and results, allowing students to predict and observe	revisiting and building on prior knowledge across the above 3 areas. All teachers in these key stages plan and deliver stimulating, challenging, differentiated and personalised lessons to all pupils. The Meadows school assessment system ensures personalised learning outcomes are delivered in all science lessons <u>Key stage 5</u> Science is taught through the following units of work: • LSC unit Gardening activities • LSC unit Science indoors/outdoors • LSC unit Healthy Eating, and • Through Medium term plans developed by the Curriculum Lead for Science; these are delivered across the 3 years • Container gardening • Science Investigation • Health Action Plan	revisiting and building on prior knowledge across the above 3 areas. All teachers in these key stages plan and deliver stimulating, challenging, differentiated and personalised lessons to all pupils. The Meadows school assessment system ensures personalised learning outcomes are delivered in all science lessons <u>Key stage 5</u> Science is taught through the following units of work: • LSC-Gardening activities • LSC-Science indoors/outdoors • PSD-Environmental Awareness • LSC-Healthy Eating Additionally, some of the science content delivered in Key Stage 5 will be delivered through non accredited units of work written by the Meadows School. Students will have the opportunity to apply skills across all bubble areas applying what they understand to different topics giving them repetition, consolidation and development over time.
--	--	--	---

	changes in their environment.		
Impact			
Impact ❖ Our students will engage in sensory-based activities that help them become more aware of their environment through sight, sound, touch, smell, and movement. ❖ Curriculum experiences, such as exploring textures, liquids, and light, allow learners to make connections between sensory stimuli and objects. ❖ Learners begin to recognize and respond to different sensory stimuli, which helps them better understand the world around them. ❖ Sensory-rich science activities help regulate emotions by offering calming experiences and a sense of routine. Exploring sensory materials like water, sand, or soft fabrics can soothe and comfort learners, improving emotional regulation.	Impact ❖ Our students will become more aware of their surroundings through sensory experiences (e.g., touch, sound, sight, and smell). This heightened awareness promotes cognitive engagement, allowing learners to make connections with their environment and explore the world in a way that is meaningful to them. ❖ Learners develop the ability to identify and differentiate sensory stimuli, improving their focus and attention to specific features of the world around them. ❖ Providing opportunities for learners to engage independently with scientific materials (e.g., exploring objects or conducting simple experiments) helps build their confidence and self-esteem. As they observe and understand more about their environment, they feel more	Impact The impact of the Science provision is demonstrated through the development of pupils who are: ❖ Confident hands-on learners who can demonstrate strong practical and maths skills (with support if needed). ❖ Students who demonstrate curiosity and are eager to learn about the world they live in. ❖ Logical thinkers who can draw on life experiences/previous knowledge to form ideas and conclusions and are able to question what they see happen in everyday life. ❖ Students are beginning to apply correct scientific vocabulary fluently. ❖ KS3 and 4 students who can progress onto accredited Science courses at KS5. ❖ The semi-formal science curriculum lays the foundation for more	Impact The impact of the Science provision is demonstrated through the development of pupils who are: ❖ Confident hands-on learners who can demonstrate strong practical and maths skills (with support if needed). ❖ Students who demonstrate curiosity and are eager to learn about the world they live in. ❖ Logical thinkers who can draw on life experiences/previous knowledge to form ideas and conclusions and are able to question what they see happen in everyday life. ❖ Students are beginning to apply correct scientific vocabulary fluently. ❖ KS3 and 4 students who are able to progress onto accredited Science courses at KS5. ❖ The science curriculum for Formal MLD learners plays a pivotal role in fostering intellectual, social, and

❖ The predictable structure of sessions provides PMLD learners with a sense of routine and security. Having a consistent approach to learning, where activities are repeated and adapted to the learner's needs, helps reduce anxiety and fosters a sense of safety. ❖ By focusing on sensory engagement, communication, and cause-and-effect exploration, the curriculum supports cognitive, emotional, social, and physical development. PMLD learners gain valuable skills in self-expression, problem-solving, and social interaction through hands-on, sensory-rich experiences.	empowered in their learning process. ❖ Early exposure to early concepts lays the groundwork for later learning in other curriculum areas. The skills developed in early science, such as observation and attention, are transferable to other subjects, including early literacy and early mathematics. Further outcomes include ❖ Successful learners, who enjoy learning, make progress, and achieve. ❖ Positive individuals who grow in confidence, perseverance, and independence. ❖ Happy students who are secure, healthy, and safe.	complex learning by focusing on hands-on experiences and practical engagement. This approach prepares learners for future academic and functional learning, ensuring they are ready to engage with more formalized educational opportunities when they are developmentally ready. ❖ The science curriculum for Semi-Formal SLD learners is designed to bridge the gap between early learning experiences and more formal academic instruction. This curriculum provides structured yet flexible opportunities for exploration, hands-on learning, and understanding of the world around them.	practical skills. It is designed to offer structured and purposeful learning opportunities that allow these learners to engage with scientific concepts in ways that are accessible and relevant to their developmental stage. ❖ hands-on, interactive nature of science lessons captures the interest of Formal MLD students. By engaging with real-world phenomena (e.g., observing plants grow, exploring how materials change), students are motivated to participate and explore the subject further. Science encourages curiosity and active involvement, which boosts motivation to learn.
--	--	--	--

